

AUTHORS INDEX

A

- ABAR, J. W., R. A. CELLITTI and A. F. SPENGLER, JR., The Use of Sonics to Predict the Mechanical Properties of Gray Iron 7

B

- BADIA, F., R. COVERT and G. KIRBY, Low Melting Brasses for Permanent Mold and Die Casting... 136
 BARTO, R. L. and D. T. HURD, Refractory Metals: New Keys to Automated Casting of Ferrous Metals 321
 BADIA, F. A., Effect of Composition and Heat Treatment on the Tensile Properties of an Aluminum-11.5 Silicon-5 Nickel Casting 290
 BAHADORI, M. N., Thermoelectrically Controlled Metal Casting 211
 BANERJEE, S. and C. R. LOPER, JR., Studies on Graphitization of Conventionally and Isothermally Annealed White Cast Irons 759
 BARDES, B. P. and M. C. FLEMINGS, Dendrite Arm Spacing and Solidification Time in Cast Aluminum-Copper Alloy 406
 BATES, C. and J. F. WALLACE, An Investigation of Thermal and Mechanical Stability of Mold Materials for Steel Castings 174
 BATES, C. E. and J. F. WALLACE, Trace Elements in Gray Iron 513
 BOENISCH, D. and W. PATTERSON, Discussion of the Scabbing Tendencies of Green Sand 470
 BREWSTER, F. S., A. L. GRAHAM and H. W. DIETERT, A Straight Line Approach to Sand Control 101
 BRIGGS, C. W., Synthetic Bonded Steel Molding Sands—Sand, Clay and Water Systems 553
 BROKLEFF, J. E. and C. S. KORTOVICH, An Evaluation of Mechanical Properties of Cast Maraging Steel 617
 BROWNE, W. H. and R. J. CHRIST, Ferritization of Ductile Iron 371
 BURGESS, P. B., Heat Treatment of Pearlitic Malleable Castings 156

C

- CAINE, J. B. and R. E. TOEPKE, Gas Pressure and Venting of Cores 19
 CARLSON, R., J. HAMILTON, W. KOEPLIN and E. LANGNER, The Commercial Application of Continuous Oxygen Enrichment in Iron Cupolas .. 150
 CELLITTI, R. A., A. F. SPENGLER, JR. and J. W. ABAR, The Use of Sonics to Predict the Mechanical Properties of Gray Iron 7
 CHEN, F. and J. KEVERIAN, Effect of Nitrogen Subsurface Pinholes in Steel Castings 281
 CHRIST, R. J. and W. H. BROWNE, Ferritization of Ductile Iron 371
 CLARK, R. A. and T. K. MCCLUHAN, American Experience with a New Strontium Inoculant in Gray Iron 394
 COLLETT, J. G., The Casting of Plutonium and Its Alloys 329
 COLLIGAN, G. A. and D. R. MUZYKA, Metal Refractory Reaction Studies in the Iron-Chromium Silica System 690
 CONRADY, J. A., J. FITZPATRICK, T. J. SMITH and R. J. HANDWERK, Improve Your Core Mixtures with a Computer 581
 COOPER, P. A., J. ZOTOS and G. F. KENT, Development of the Mathematical Models Which Predict the Mechanical Properties of High Alloy, Ultra-High Strength Steel Castings 454
 COUTURE, A. and J. W. MEIER, Effect of Wall Thickness on Tensile Properties of Mg-Al-Zn Alloy Castings 164
 COUTURE, A. and J. O. EDWARDS, The Mode of Solidification of Copper-Base Casting Alloys .. 680
 COUTURE, A. and J. O. EDWARDS, The Hot Tearing of Copper-Base Casting Alloys 709
 COVERT, R., G. KIRBY and F. BADIA, Low Melting Brasses for Permanent Mold and Die Casting . 136
 CROCKER, B. W., A Method for the Proper Selection of Exothermic Hot Topping Materials for Risers 338
 CROSLLEY, P. B. and L. F. MONDOLFO, The Modification of Aluminum-Silicon Alloys 53

CHURCH, N., P. WIESER and J. F. WALLACE, Control of Cast Grain Size of Steel Castings, Effect of Grain Refinement on Properties	113
COUTURE, A. and J. W. MEIER, The Effect of Casting Temperature and Holding Time on Magnesium Alloy Test Bar Properties	92

D

DAWSON, J. V., The Stimulating Effect of Strontium on Ferrosilicon and Other Silicon-Containing Inoculants	129
DIETERT, H. W., F. S. BREWSTER and A. L. GRAHAM, A Straight Line Approach to Sand Control	101
DINGES, G. and W. E. GRUVER, JR., Temper Embrittlement of Ductile Iron	437
DRAPER, A. B. and L. LUIS, Effect Of Overflow Wells, Gating and Injection Parameters on the Porosity of a Die Casting	245
DRAPER, A. B. and R. P. MARCHOCK, Elimination of Metal Waves in Hardware Finish Zinc	325

E

EDWARDS, J. O. and A. COUTURE, The Mode of Solidification of Copper-Base Casting Alloys ..	680
EDWARDS, J. O. and A. COUTURE, The Hot Tearing of Copper-Base Casting Alloys	709
ELLISON, W. and P. M. WECHSELBLATT, Cupola Emission Cleaning Systems—Utilizing High Energy Venturi Scrubbing	350
ESTES, J. W. and B. G. GRAY, Oxy-Fuel Tuyere Burners	193
EVANS, J. K. and R. S. FRENCH, A 70-30 Copper-Nickel Casting Alloy Containing Beryllium ...	334

F

FITZPATRICK, J., T. J. SMITH, R. J. HANDWERK and J. A. CONRADY, Improve Your Core Mixtures with a Computer	581
FLEMINGS, M. C. and B. P. BARDES, Dendrite Arm Spacing and Solidification Time in Cast Aluminum-Copper Alloy	406
FLINN, R. A., F. E. ROTE and V. SARIN, New Methods for the Determination of the Formation of Inclusions during and after Deoxidation ..	401
FLINN, R. A., P. K. TROJAN and P. J. GUICHELAAR, An Investigation of Entrapment of Dross and Inclusions Using Transparent Whirl Gate Models	462
FLINN, R. A., F. E. ROTE and P. GUICHELAAR, Riser Design for Copper Alloys of Narrow and Extended Freezing Ranges	380
FLINN, R. A. and L. H. VANVLACK, Macroinclusions in Steel Castings	485
FRENCH, R. S. and J. K. EVANS, A 70-30 Copper-Nickel Casting Alloy Containing Beryllium ...	334

G

GARROW, E., Heat Treatment of Investment-Cast Stainless Steels and High Temperature Alloys .	534
--	-----

GENTRY, E. G., Thermal Stability of Carbon Sand and Other Non-Silica Molding Materials	184
GERHARDT, R. O., W. L. OLSEN, JR. and J. J. JANUSH, Modern Castings Cleaning Equipment	643
GHOSH, S., The Contribution of Segregation Zones in Controlled Eutectic Structures	302
GILMORE, R. R. and D. R. HARBUR, High Yield Uranium-233 Casting Operations	217
GRAHAM, A. L., H. W. DIETERT and F. S. BREWSTER, A Straight Line Approach to Sand Control	101
GRAY, B. G. and J. W. ESTES, Oxy-Fuel Tuyere Burners	193
GRUVER, W. E. JR. and G. DINGES, Temper Embrittlement of Ductile Iron	437
GOUWENS, P. and T. WATMOUGH, Cast High Speed Steels	769
GUICHELAAR, P. J., R. A. FLINN and P. K. TROJAN, An Investigation of Entrapment of Dross and Inclusions Using Transparent Whirl Gate Models	462
GUICHELAAR, P., R. A. FLINN and F. E. ROTE, Riser Design for Copper Alloys of Narrow and Extended Freezing Ranges	380

H

HAINES, D. R. and J. KEVERIAN, Application of Transition Temperature Concepts Within the Steel Foundry	343
HAMILTON, J., W. KOEPLIN, E. LANGNER and R. CARLSON, The Commercial Application of Continuous Oxygen Enrichment in Iron Cupolas ..	150
HANDWERK, R. J., J. A. CONRADY, J. FITZPATRICK and T. J. SMITH, Improve Your Core Mixtures with a Computer	581
HARBUR, D. R. and R. R. GILMORE, High Yield Uranium-233 Casting Operations	217
HARVEY, J. J., Plastic Patternmaking with Modern Materials in England	627
HARTMAN, D. C., Pattern Standards	273
HEINE, R. W. and K. M. HTUN, Graphitization of High Silicon White Irons	65
HEINE, R. W. and J. PELLEG, On the Volume Change in White Iron Castings	541
HEINE, R. W. and C. R. LOPER, JR., Dross Formation in the Processing of Ductile Cast Iron ...	274
HEINE, R. W., J. S. SCHUMACHER and C. HENSCHER, Casting Dimensions and Mold Dimensions	357
HEINE, R. W. and C. R. LOPER, JR., Principles of Slag and Dross Formation on Molten Cast Iron	421
HEINE, R. W., Spiking Solidification and Defects in White Cast Irons	734
HENSCHER, C., R. W. HEINE and J. S. SCHUMACHER, Casting Dimensions and Mold Dimensions	357
HENZEL, J. G., JR., Temperature Loss from Gating Systems	365
HENZEL, J. G., JR. and J. KEVERIAN, Fluid Flow from Bottom Pour Ladles	545
HENZEL, J. G., JR. and J. KEVERIAN, Comparison of Calculated and Measured Solidification Patterns in a Variety of Steel Castings	661
HOBSEN, M. J., Economic Evaluation of Capital Expenditure Proposals	1

HTUN, K. M. and R. W. HEINE, Graphitization of High Silicon White Irons	65
HURD, D. T. and R. L. BARTO, Refractory Metals: New Keys to Automated Casting of Ferrous Metals	321

J

JANUSH, J. J., R. O. Gerhardt and W. L. OLSEN, JR., Modern Castings Cleaning Equipment	643
JEFFERY, W. C., Spectrochemical Analysis of Trace Elements in Irons and Steels by the Carrier Distillation Method	13

K

KENT, G. F., P. A. COOPER and J. ZOTOS, Development of the Mathematical Models Which Predict the Mechanical Properties of High Alloy, Ultra-High Strength Steel Castings	454
KEVERIAN, J. and F. CHEN, Effect of Nitrogen Subsurface Pinholes in Steel Castings	281
KEVERIAN, J. and D. R. HAINES, Application of Transition Temperature Concepts Within the Steel Foundry	343
KEVERIAN, J. and J. K. SPRINKLE, Effect of High Temperature Homogenization and Other Factors on Mechanical Behavior of a Low Alloy Steel	389
KEVERIAN, J. and J. G. HENZEL, JR., Fluid Flow from Bottom Pour Ladles	545
KEVERIAN, J. and J. G. HENZEL, JR., Comparison of Calculated and Measured Solidification Patterns in a Variety of Steel Castings	150
KIRBY, G., F. BADIA and R. COVERT, Low Melting Brasses for Permanent Mold and Die Casting ..	136
KOEPLIN, W., E. LANGNER, R. CARLSON and J. HAMILTON, The Commercial Application of Continuous Oxygen Enrichment in Iron Cupolas	150
KOGLIN, E. F., The Evolution of a Modern Sand Binder	208
KORTOVICH, C. S. and J. E. BROKLEFF, An Evaluation of Mechanical Properties of Cast Maraging Steel	617

L

LANGNER, E., R. CARLSON, J. HAMILTON and W. KOEPLIN, The Commercial Application of Continuous Oxygen Enrichment in Iron Cupolas ..	150
LAVELLE, D. L., Evaluation of Sand Cast Aluminum Alloy Test Bar Design	586
LOPER, C. R. JR. and R. W. HEINE, Dross Formation in the Processing of Ductile Cast Iron ...	274
LOPER, C. R. JR., and R. W. HEINE, Principles of Slag and Dross Formation on Molten Cast Iron	421
LOPER, C. R. JR., AND S. BANERJEE, Studies on Graphitization of Conventionally and Isothermally Annealed White Cast Irons	759
LUIS, L. and A. B. DRAPER, Effect of Overflow Wells, Gating and Injection Parameters on the Porosity of a Die Casting	245

M

MARCHOK, R. P. and A. B. DRAPER, Elimination of Metal Waves in Hardware Finish Zinc	325
MAREK, C. T., Green Sand Permeability—Its Significance and Control	70
MCCLUHAN, T. K. and R. A. CLARK, American Experience with a New Strontium Inoculant in Gray Iron	394
MEIER, J. W. and A. COUTURE, The Effect of Casting Temperature and Holding Time on Magnesium Alloy Test Bar Properties	92
MEIER, J. W. and A. COUTURE, Effect of Wall Thickness on Tensile Properties of Mg-Al-Zn Alloy Castings	164
MEIER, J. W., Investigation of Dow Test Design for Sand-Cast Magnesium Alloys	413
MONDOLFO, L. F. and P. B. CROSLLEY, The Modification of Aluminum-Silicon Alloys	53
MUZYKA, D. R. and G. A. COLLIGAN, Metal Refractory Reaction Studies in the Iron-Chromium Silica System	690

N

NASS, C. V., Cast Metals—A Growth Industry ...	257
--	-----

O

OKURO, T., D. M. Converter	595
OLSEN, W. L. JR., J. J. JANUSH and R. O. GERHARDT, Modern Castings Cleaning Equipment	643

P

PANCHANATHAN, V., M. SESHADRI and A. RAMACHANDRAN, Volume Ratio Effect on Thermal Behavior of Metallic Molds	37
PATTERSON, W. and D. BOENISCH, Discussion of the Scabbing Tendencies of Green Sand	470
PEARSON, D. A., Stress Rupture and Elongation Properties of Malleable Iron at Elevated Temperatures	429
PELLEG, J. and R. W. HEINE, On the Volume Change in White Iron Castings	541
PHELPS, W. C. JR., and J. S. PRASAD, A Study of the Solidification of Iron-Carbon-Silicon Alloys	237
POLLARD, W. A., Water Spray Chilling of Aluminum Alloy Shell Mold Castings	201
PRASAD, J. S. and W. C. PHELPS, JR., A Study of the Solidification of Iron-Carbon-Silicon Alloys	237

R

RAMACHANDRAN, A., K. SRINAGESH and M. SESHADRI, On the Compaction of Bonded Grains ...	27
RAMACHANDRAN, A., M. SESHADRI and V. PANCHANATHAN, Volume Ratio Effect on Thermal Behavior of Metallic Molds	37
RAO, B. B. and D. C. WILLIAMS, The Effect of Variation in Rammed Sand Density and Various Additives Upon the Thermal Conductivity of Green Sand Mixtures	43

REHDER, J. E., Modern Iron Melting Techniques and Their Application	573
ROBINS, J., L. TORIELLO and R. J. SCHAFER, The Effect of Sand and Foundry Variables on the Performance of No-Bake Oils	525
ROTE, F. E., V. SARIN and R. A. FLINN, New Methods for the Determination of the Formation of Inclusions during and after Deoxidation	401
ROTE, F. E., P. GUICHELAAR and R. A. FLINN, Riser Design for Copper Alloys of Narrow and Extended Freezing Ranges	380

S

SARIN, V., R. A. FLINN and F. E. ROTE, New Methods for the Determination of the Formation of Inclusions during and after Deoxidation	401
SCHAFER, R. J., J. ROBINS and L. TORIELLO, The Effect of Sand and Foundry Variables on the Performance of No-Bake Oils	525
SCHELLENG, R. D., Effect of Certain Elements on the Form of Graphite in Cast Iron	700
SCHMID, F., Casting a 36-in. Diameter HP Copper Crucible with Internal Nickel Heat Exchanger Tubes	229
SCHUMACHER, J. S., C. HENSCHER and R. W. HEINE, Casting Dimensions and Mold Dimensions	357
SESHADRI, M., A. RAMACHANDRAN and K. SRINAGESH, On the Compaction of Bonded Grains ...	27
SESHADRI, M., V. PANCHANATHAN and A. RAMACHANDRAN, Volume Ratio Effect on Thermal Behavior of Metallic Molds	37
SMITH, T. J., R. J. HANDWERK, J. A. CONRADY and J. FITZPATRICK, Improve Your Core Mixtures with a Computer	581
SODERLING, L. A., New Method Determines Active Clay in Molding Sand	23
SPENGLER, A. F. JR., J. W. ABAR and R. A. CELLITTI, The Use of Sonics to Predict the Mechanical Properties of Gray Iron	7
SPRINKLE, J. K. and J. KEVERIAN, Effect of High Temperature Homogenization and Other Factors on Mechanical Behavior of a Low Alloy Steel	389
SRINAGESH, K., M. SESHADRI and A. RAMACHANDRAN, On the Compaction of Bonded Grains ...	27
STEFFORA, T. J., Induction Melting for Ductile Iron Production	186

T

TOEPKE, R. E. and J. B. CAINE, Gas Pressure and Venting of Cores	19
--	----

TORIELLO, L., R. J. SCHAFER and J. ROBINS, The Effect of Sand and Foundry Variables on the Performance of No-Bake Oils	525
TROJAN, P. K., P. J. GUICHELAAR and R. A. FLINN, An Investigation of Entrapment of Dross and Inclusions Using Transparent Whirl Gate Models	462
TRUCKENMILLER, W. C., Electron Beam Welding of Pearlitic Malleable Iron	312
TUBICH, G. E., The Potential Health Hazards of the New Oil Base No-Bake Binders	448

V

VANVLACK, L. H. and R. A. FLINN, Macroinclusions in Steel Castings	485
--	-----

W

WALES, W. F., Casting Techniques for Casting High Strength Steel	82
WALLACE, J. F., N. CHURCH and P. WIESER, Control of Cast Grain Size of Steel Castings, Effect of Grain Refinement on Properties	113
WALLACE, J. F. and C. BATES, An Investigation of Thermal and Mechanical Stability of Mold Materials for Steel Castings	174
WALLACE, J. F. and C. E. BATES, Trace Elements in Gray Iron	513
WARRICK, R. J., Spheroidal Graphite Nuclei in Rare Earth and Magnesium Inoculated Irons ..	722
WATMOUGH, T., Fatigue Strength of Alloyed Ductile Cast Iron	742
WATMOUGH, T. and P. GOUWENS, Cast High Speed Steels	769
WENNINGER, C. E., High Efficiency Mulling of Clay-Cereal Mixtures	221
WIESER, P., J. F. WALLACE and N. CHURCH, Control of Cast Grain Size of Steel Castings, Effect of Grain Refinement on Properties	113
WECHSELBLATT, P. M. and W. ELLISON, Cupola Emission Cleaning Systems—Utilizing High Energy Venturi Scrubbing	350
WILLIAMS, D. C. and B. B. RAO, The Effect of Variation in Rammed Sand Density and Various Additives upon the Thermal Conductivity of Green Sand Mixtures	43

Z

ZOTOS, J., G. F. KENT and P. A. COOPER, Development of the Mathematical Models Which Predict the Mechanical Properties of High Alloy, Ultra-High Strength Steel Castings	454
--	-----

SUBJECT INDEX

A

Alloy(s):

- Aluminum-silicon, crystallization of 53
- Aluminum-silicon, diffusion rate 53
- Aluminum-silicon, eutectic composition and structure.. 60
- Aluminum-silicon, growth of eutectic..... 53
- Aluminum-silicon, nucleation of 53
- Aluminum-silicon, phosphorus additions to.... 59
- Iron-carbon-silicon, solidification of 237
- Iron-carbon-silicon
 - Cerium atoms 237
 - Metallographic techniques 239
 - Silicon content 241
 - Spheroidal graphite formation 238
 - Thermal analysis 239
- Aluminum Alloys:
 - Al-Cu
 - Dendrite arm spacing.... 406
 - Heat transfer 408
 - Mechanical properties ... 409
 - Solidification time 406
 - Composition, effect of, on tensile properties..... 290
 - Copper, effect of nominal addition 293
 - Ductility 293
 - Heat treatment, effect of, on tensile properties..... 290
 - Runner system, non-symmetrical 589
 - Sand cast test bar 589
 - Shell mold castings..... 201

- Silicon, modification of 53
- Silicon, nucleation phenomena 53
- Tensile properties 205
- Test bar, evaluation of design 589
- Solidification 204
- Tensile ductility, reduction of 297
- Water spray chilling..... 202
- Yield strength 293

B

Binders:

- Core 448
- Health hazards .. 450
- Isocyanates, types of..... 449
- Mold 448
- Oil base no-bake..... 448
- Toxicity, danger of..... 449

Brass & Bronze:

- Corrosion resistance 140
- Copper-base alloy 136
- Die casting, testing..... 139
- Die life 139
- Metallography 140
- Permanent mold, testing.. 138
- Phosphorus, addition of.... 138

C

Casting(s):

- Dimensions 357
- Factors, correction 357
- Graphite mold 217
- Heat transfer 212

- Melting problems, with plutonium 329
- Mold dilation 357
- Plutonium and alloys
 - Fuels 329
 - Molds, types needed.... 329
 - Safety 330
 - Toxicity 331
 - Vacuum 330
- Shrinkage 359
- Solidification 212
- Thermoelectric melting 211
- Uranium
 - Directional cooling 218
 - Gamma radiation 217
 - Safety precautions 217

Cast Iron:

- Acoustical properties 7
- Dross, effect of on molten iron..... 421
- Ductile iron, slag and dross effects 421
- Fatigue strength 8
- Gas, relation to slag formation 424
- Gray iron, slag and dross effects 421
- Mechanical properties 7
- Nondestructive testing 7
- Pinholing 424
- Reoxidation 426
- Resonant frequency 8
- Slag composition 424
- Slag, effect of on molten iron..... 421
- Sonics, use of, to predict mechanical properties 7
- Spectrochemical analysis, carrier distillation method.. 13
- Spectrographic standards .. 13
- Tensile strength 8

on stress-rupture and elongation	433
Martensite, acicular tempered	159
Metallographic examination	435
Oil quench, direct	158
Pearlitic castings, heat treatment of	156
Pearlitic malleable, welding of	314
Steels, medium carbon	312
Stress-rupture properties ..	429
Tempering treatment	316
Welding, electron beam	312
Welding, fusion	312
Mold(s):	
Air gap formation	37
Mold material, influence of ..	37
Heat extraction, temperature-time curves ...	41
Interface temperature, maximum	42
Mold ratio	37
Test casting, solidification time of	38
Thermal behavior	37
Volume ratio effect	37

O

Oils:	
No-bake	
Binder systems	525
Furan resins	531
Performance, effect of foundry variables on	528
Performance, effect of sand on	525

P

Patternmaking:	
Design	627
Epoxy	633
Plastic	627
Polystyrene foam	631
Standards for foundry usage ..	273

R

Refractory:	
Columbium	321
Die materials	323
Ferrous metals, automated casting	321
Molybdenum	321
Tantalum	321
Tungsten	321
Risers and Riserings:	
Casting design	341
Exothermic hot topping materials	338

Gating	338
Solidification	342
Thermite	339

S

Sand:	
Binder, development of a modern	209
Bonds	28
Carbon	
Expansion	142
Thermal stability	142
Clay	30
Clay-cereal mixtures, mulling of	221
Compaction	27
Control	
A straight line approach ..	101
Green	
Additives, effect of on thermal conductivity ..	43
Additives, molding sand ..	481
Compressive stress	472
Condensate reduction ...	74
Condensation	72
Hot permeability	71
Moisture content increase, effect of	51
Mold defects	470
Molds, skin drying of	76
Permeability of vapor transport zone	73
Scabbing tendencies, mechanics of	470
Scab diagram	475
Seacoal	43
Tensile strength, wet	472
Testing apparatus, wet strength	474
Thermal conductivity data ..	46
Transformation dynamics vs. mold pressures	75
Transformation zones ...	70
Void space control	76
Variation in rammed density, effect of	43
Water contents, effect of on thermal conductivity ..	43
Green deformation	102
Moldability index	122
Mold hardness	101
Molding materials	143
Molding, synthetic bonded steel	553
Mold strength	101
Mulling	
Bonding	221
Cereal moisture requirements	228
Clay-cereal	223
Density	223
Facing sands	221

Oil	30
Oil no-bake system	210
Permeability	101
Phenol, as substitute for furfuryl alcohol	210
Rammed density	108
Temper	101
Water, as an additive	108

Silicon:

Calcium, nullifying effect ...	132
Carbon equivalent iron, use of	129
Inoculants, silicon-based ...	132
Nominally pure	132
Strontium, effect on ferrosilicon	129

Sand:

Synthetic bonds	553
-----------------------	-----

Steel:

Alloy depletion	540
Ceramic shell molds	534
High temperature alloys ...	537
Investment casting	534
Stainless, heat treatment of ..	535
Vacuum casting	539

Steel Castings:

Binders	176
Cast steel, maraging, data ..	455
Ceramic molds, use of	88
Chemistry	391
Deoxidation	83
Deoxidation practice, effect of	283
4300 series steel	82
Furane	282
High alloy, ultra-high strength	454
Gas content, initial, effect of ..	286
Gating design	85
Grain refinement, effect of ..	113
Grain size, control of	113
Heat flow	121
Heat treatment	85
Heat treatment	390
High sulfur content	89
Homogenization, effect of high temperature	390
Inclusions, effect of nonmetallic	391
Inoculation	113
Hydrogen pickup	282
Low alloy steel	389
Magnetic particle	82
Maraging cast steel, data ...	455
Mathematical models, development of	454
Mechanical behavior	391
Mechanical properties	456
Melting practice	83
Micrographic study	392
Mold materials, thermal & mechanical properties	174
Mold wall deformation	179
Nitrogen pinholes	281

No-bake	282	Fracture diagram	344	Carbon equivalent	68
Notch strength toughness..	458	Impact testing	344	Effect of silicon on	
Resin bond	281	Steel foundry	343	first-stage graphitization....	66
Superheat	119	Transition temperatures,		Graphitization of	65
Titanium	115	application of	343	High silicon	65
Strontium:		Tuyere:		Ladle additions, effect of...	68
Chill	394	Cupolas	194	Mold aggregate	542
Ferrosilicon	397	Fuel injection	200	Nodule number	65
Gray iron, inoculant in....	395	Oxy-fuels	195	Nodule size	65
Inoculant, used as.....	394	Vertical shaft furnace.....	193	Section size, effect of	
T				on first-stage graphitization	67
Temperature:		W		Solidification	541
Drop weight test.....	344	White Iron:		Volumetric changes	541
Ductile fracture	343	Annealing	65		

68
66
65
65
68
542
65
65
67
541
541

Table of Contents

Proceedings Summary of 70th Annual Meeting.	vi	Thermal Stability of Carbon Sand and Other	
Annual Report of AFS General Manager.....	xi	Non-Silica Molding Materials	142
Annual Report of AFS Treasurer	xv	The Commercial Application of Continuous Oxy-	
Annual Report of Technical Activities	xvi	gen Enrichment in Iron Cupolas	150
Minutes of AFS T&RI Trustees Meeting	xviii	Heat Treatment of Pearlitic Malleable Castings ..	156
Minutes of AFS Board of Directors		Effect of Wall Thickness on Tensile Properties of	
First Meeting	xx	Mg-Al-Zn Alloy Castings	164
Minutes of AFS Technical Council Meeting....	xxiv	An Investigation of Thermal and Mechanical Sta-	
Minutes of AFS T&RI Trustees Meeting	xxv	bility of Mold Materials for Steel Castings ...	174
Minutes of AFS Board of Directors		Induction Melting for Ductile Iron Production ..	186
Second Meeting	xxvii	Oxy-Fuel Tuyere Burners	193
Minutes of AFS Board of Directors		Water Spray Chilling of Aluminum Alloy Shell	
Final Meeting	xxxi	Mold Castings	201
Minutes of AFS T&RI Trustees Meeting	xxxiii	The Evolution of a Modern Sand Binder	208
23rd Annual Chapter Officers Conference	xxx	Thermoelectrically Controlled Metal Casting ...	211
		High Yield Uranium-233 Casting Operations	217
		High Efficiency Mulling of Clay-Cereal Mixtures	221
		Casting a 36-in. Diameter HP Copper Crucible	
		with Internal Nickel Heat Exchanger Tubes ...	229
		A Study of the Solidification of Iron-Carbon-Sili-	
		con Alloys	237
Economic Evaluation of Capital Expenditure		Effect of Overflow Wells, Gating and Injection	
Proposals	1	Parameters on the Porosity of a Die Casting ...	245
The Use of Sonics to Predict the Mechanical		Cast Metals—A Growth Industry (1966 Charles	
Properties of Gray Iron	7	Edgar Hoyt Memorial Lecture)	257
Spectrochemical Analysis of Trace Elements in		Pattern Standards	273
Irons and Steels by the Carrier Distillation		Dross Formation in the Processing of Ductile Cast	
Method	13	Iron	274
Gas Pressure and Venting of Cores	19	Effect of Nitrogen Subsurface Pinholes in Steel	
New Method Determines Active Clay in Molding		Castings	281
Sand	23	Effect of Composition and Heat Treatment on	
On the Compaction of Bonded Grains	27	the Tensile Properties of an Aluminum-11.5	
Volume Ratio Effect on Thermal Behavior of		Silicon-5 Nickel Casting	290
Metallic Molds	37	The Contribution of Segregation Zones in Con-	
The Effect of Variation in Rammed Sand Density		trolled Eutectic Structures	302
and Various Additives upon the Thermal Con-		Electron Beam Welding of Pearlitic Malleable	
ductivity of Green Sand Mixtures	43	Iron	312
The Modification of Aluminum-Silicon Alloys ..	53	Refractory Metals: New Key to Automated Cast-	
Graphitization of High Silicon White Irons ...	65	ing of Ferrous Metals	321
Green Sand Permeability—Its Significance and		Elimination of Metal Waves in Hardware Finish	
Control	70	Zinc	325
Casting Techniques for Casting High Strength		The Casting of Plutonium and Its Alloys	329
Steel	82	A 70-30 Copper Nickel Casting Alloy Containing	
The Effect of Casting Temperature and Holding		Beryllium	334
Time on Magnesium Alloy Test Bar Properties	92	A Method for the Proper Selection of Exothermic	
A Straight Line Approach to Sand Control	101	Hot Topping Materials for Risers	338
Control of Cast Grain Size of Steel Castings, Ef-		Application of Transition Temperature Concepts	
fect of Grain Refinement on Properties	113	within the Steel Foundry	343
The Stimulating Effect of Strontium on Ferro-		Cupola Emission Cleaning Systems—Utilizing	
silicon and Other Silicon-Containing Inoculants	129	High Energy Venturi Scrubbing	350
Low Melting Brasses for Permanent Mold and		Casting Dimensions and Mold Dimensions	357
Die Casting	136		

Temperature Loss from Gating Systems	365	On the Volume Change in White Iron Castings .	541
Ferritization of Ductile Iron	371	Fluid Flow from Bottom Pour Ladles	545
Riser Design for Copper Alloys of Narrow and Extended Freezing Ranges	380	Synthetic Bonded Steel Molding Sands—Sand, Clay and Water Systems	553
Effect of High Temperature Homogenization and Other Factors on Mechanical Behavior of a Low Alloy Steel	389	Modern Iron Melting Techniques and Their Ap- plication	573
American Experience with a New Strontium Inoc- ulant in Gray Iron	394	Improve Your Core Mixtures with a Computer .	581
New Methods for the Determination of the For- mation of Inclusions during and after Deoxi- dation	401	Evaluation of Sand Cast Aluminum Alloy Test Bar Design	586
Dendrite Arm Spacing and Solidification Time in Cast Aluminum-Copper Alloy	406	D. M. Converter	595
Investigation of Dow Test Design for Sand-Cast Magnesium Alloys	413	An Evaluation of Mechanical Properties of Cast Maraging Steel	617
Principles of Slag and Dross Formation on Molten Cast Iron	421	Plastic Patternmaking with Modern Materials in England	627
Stress Rupture and Elongation Properties of Mal- leable Iron at Elevated Temperatures	429	Modern Castings Cleaning Equipment	643
Temper Embrittlement of Ductile Iron	437	Comparison of Calculated and Measured Solidifi- cation Patterns in a Variety of Steel Castings..	661
The Potential Health Hazards of the New Oil Base No-Bake Binders	448	The Mode of Solidification of Copper-Base Cast- ing Alloys	680
Development of Mathematical Models Which Pre- dict the Mechanical Properties of High-Alloy, Ultra-High Strength Steel Castings	454	Metal Refractory Reaction Studies in the Iron- Chromium Silica System	690
An Investigation of Entrapment of Dross and In- clusions using Whirl Gate Models	462	Effect of Certain Elements on the Form of Graph- ite in Cast Iron	700
Discussion of the Scabbing Tendencies of Green Sand	470	The Hot Tearing of Copper-Base Casting Alloys.	709
Macroinclusions in Steel Castings	485	Spheroidal Graphite Nuclei in Rare Earth and Magnesium Inoculated Irons	722
Trace Elements in Gray Iron	513	Spiking Solidification and Defects in White Cast Irons	734
The Effect of Sand and Foundry Variables on the Performance of No-Bake Oils	525	Fatigue Strength of Alloyed Ductile Cast Iron..	742
Heat Treatment of Investment-Cast Stainless Steels and High Temperature Alloys	534	Studies on Graphitization of Conventionally and Isothermally Annealed White Cast Irons.....	759
		Cast High Speed Steels	769
		Discussions	790
		Authors Index	805
		Subject Index	809

